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CASE REPORT

Type 6 avulsion of the insertion of the flexor digitorum profundus tendon

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Introduction

Five types of avulsion of the insertion of flexor digitorum profundus tendon have been described[1–13,15,16] (Fig. 1). Type 1 is an avulsion without fracture, with the tendon retracting into the palm. Primary tendon repair (with a pull-out suture) should be done within 10 days, before tendon shortening and collapse of the flexor sheath occur. In type 2 avulsion, a small fleck of bone is avulsed with the tendon, which retracts to the level of the proximal interphalangeal joint. Repair is possible within the first few weeks. Type 3 injuries have a large bony fragment (the bony fragment is extraarticular in type 3a and intrarticular in type 3b), which prevents retraction beyond the A4 pulley. Repair of type 3a avulsions is possible even after a delay of few months. However, early repair of type 3b should be performed to avoid joint incongruity. Types 4a and 4b are similar to types 3a and 3b, respectively (avulsions with a large bony fragment), but there is a simultaneous avulsion of the tendon from the bony fragment, which allows tendon retraction into the palm. Both type 4 injuries should be repaired within 10 days because of the significant tendon retraction. In type 5 injuries, profundus avulsions also occur with an attached osseous fragment; but there is a concomitant fracture of the distal phalanx (the fracture is extra-articular in type 5a and intraarticular in type 5b). Type 5 injuries are rare and are more complicated to manage because stability of the distal phalanx and congruity of the distal interphalangeal joint should be obtained prior to fixation of the avulsed osseous fragment.

All previous reports of flexor profundus avulsions were mostly closed injuries and the avulsed osseous fragment (in types 3, 4 and 5) was always available for fixation into the distal phalanx.[1–13,15,16] In this paper, the author presents a case of an open flexor digitorum profundus avulsion with a large osseous fragment and in which the osseous fragment was missing and hence was not available for fixation.

Case report

A 28-year-old man fell on a sharp object resulting in an open injury to the left little finger. Clinical examination showed a volar wound near the distal interphalangeal joint crease and loss of flexion of the distal phalanx. The injury was similar to type 5a but the avulsed osseous fragment (site of insertion of the tendon) was missing (Fig. 2a).

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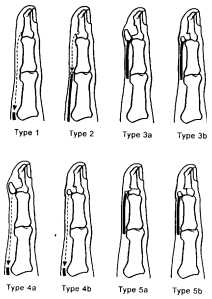

Figure 1 Classification of the avulsion of the insertion of the flexor digitorum profundus tendon (modified from Al-Qattan,[1] with permission from Elsevier).

Surgery was performed on the same day of injury. A k-wire was used to fix the extraarticular fracture of the distal phalanx (Fig. 2b). The retracted flexor tendon was brought to the wound and sutured with 3/0 polypropylene to the remaining part of the distal phalanx at the site of the osseous defect. Post operatively, the patient was allowed to actively flex the finger (against no resistance) at the proximal interphalangeal and metacarpophalangeal joints. Hyperextension of the digit was prevented by an extension-blocking splint. The k-wire was removed in 6 weeks (Fig. 2c) and physiotherapy exercise to the distal interphalangeal joint was

Figure 2 (a) Avulsion of the insertion of the flexor digitorum profundus tendon with a concomitant extraarticular fracture of the distal phalanx. Note the missing osseous fragment from the distal phalanx to which the tendon is normally inserted. (b) A radiograph after k-wire fixation of the fracture and reinsertion of the flexor tendon into the bony defect. (c) Appearance of the healed fracture immediately after removal of the k-wire. (d) Appearance 6 months later. Most of the bony defect has reossified except at the site of the new insertion of the profundus tendon.

begun. By 6 months, most of the bony defect had reossified (Fig. 2d) and the total active motion of the interphalangeal joints was excellent (160°) as per the grading of Strickland and Glogovac.[14]

Discussion

The main reason for classifying flexor profundus avulsion injuries is its impact on management and determining the timing of surgical reconstruction. The current case report does not fit any of the previous types (Fig. 1). First, the injury is open, and hence immediate repair is mandatory. Second, the large osseous fragment to which the profundus tendon normally inserts was missing and hence was not available for fixation. Instead, the tendon end was reinserted to the remaining part of the distal phalanx at the site of osseous defect. The most complicating factor in the management of our case was the missing large bony fragment. Therefore, all flexor profundus tendon avulsions with a large osseous fragment (Types 3, 4 or 5) in which there is loss of the fragment should be grouped in a separate category (type 6). Salvage of the distal inter phalangeal joint is possible if the missing osseous fragment is extraarticular as shown in the current case report. However, fusion of joint may be necessary if the missing fragment is intraarticular.

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